

# EUROPEAN PATENT OFFICE

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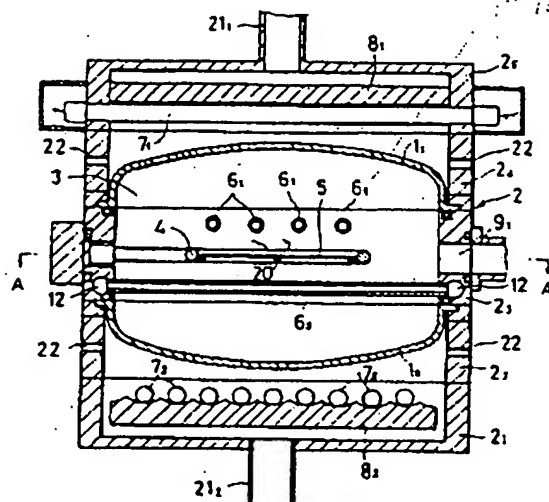
APPLICATION NUMBER : 61124727

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TITLE : RAPID HEATING AND COOLING  
DEVICE FOR SEMICONDUCTOR  
WAFER TREATMENT



**ABSTRACT :** PURPOSE: To rapidly heat up or cool down wafers as well as to maintain the wafers at a uniform temperature by a method wherein two infrared ray lamps, orthogonally intersecting with each other opposing to a pair of bell jars, are arranged and two nozzles to be used for blowing of cooling gas, crossing at right angle with each other, are provided on one surface and other surface of the wafer arranged in a chamber.

CONSTITUTION: When infrared ray lamps  $7_1$  and  $7_2$  are lighted up, as a chamber 3 has a short distance between the upper and the lower sides and the infrared lamps  $7_1$  and  $7_2$  are arranged in close vicinity to the upper and the lower sides of a wafer 5, the wafer is heated up quickly. Also, as the infrared ray lamps  $7_1$  and  $7_2$  are arranged at right angle with each other, the wafer 5 can be heated up to a uniform temperature on the whole surface, and also the temperature distribution of the wafer 5 can be controlled two-dimensionally by regulating the power applied to the infrared ray lamps  $7_1$  and  $7_2$ . When a cooling control device 14 is operated and the cooling gas such as helium and the like is blown against the upper and the lower surfaces of the wafer from nozzles  $6_1$  and  $6_2$ , the whole surface of the wafer 5 can be cooled uniformly, because the nozzles  $6_1$  and  $6_2$  are crossed at right angle with each other.

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